

Koilonychia in the clinic: A case report

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Abstract

Background: Koilonychia, or “spoon shaped” nails, is most commonly seen on the first three digits of the fingers. It is characterized by a nail plate that is depressed centrally and everted laterally. It is not seen often in clinic, but mostly read about in textbooks. Although commonly associated with iron deficiency anemia, there are a myriad of other causes.

Case Report: A 62-year-old African American woman presented for annual exam where she noted a chronically decreased appetite. On exam she appeared thin with thin, concave nails. The diagnosis was koilonychia secondary to malnutrition. Her risk factors for malnutrition include chronic alcohol abuse and a history of a partial gastrectomy. Her comprehensive metabolic panel was notable for a glucose of 39 mg/dL, alanine transaminase of 32 U/L and an aspartate aminotransferase of 84U/L.

Conclusion: Koilonychia can be a sign of malnutrition. Although classically associated with iron deficiency, koilonychia is also associated with primary dermatoses, such as psoriasis; malnutrition, particularly with riboflavin, niacin, and vitamin C deficiencies; along with hemochromatosis, coronary artery disease, gastrointestinal carcinoma, hypothyroidism, trauma, and occupational chemical exposure.

Keywords

Koilonychia; malnutrition; chronic alcohol abuse; nail disorder

Introduction

Koilonychia is often read about in textbooks, but not seen often in clinic. Koilonychia refers to “spoon shaped” nails which are depressed centrally and elevated laterally. The first three fingers are most commonly affected in adults [1]. Although classically associated with iron deficiency, there are a myriad of causes and it can be a sign of a serious underlying medical problem [2]. We present a case of koilonychia associated

with malnutrition in a patient with a history of alcohol abuse and a surgical history of an antrectomy with a Billroth II repair.

Case Report

A 62-year-old African American woman presented to internal medicine clinic for her annual exam. She reported a chronically poor appetite. Her past medical history included alcohol abuse of at least seven years, tobacco abuse, a history of gastric ulcerations, a history of a malignant esophageal neoplasm, and major depressive disorder. Surgical history included an antrectomy and Billroth II reconstruction years prior due to chronic gastric ulceration, most likely secondary to alcohol abuse. She had been prescribed thiamine and multivitamin supplements, although compliance was questionable.

Physical exam showed a thin woman with spoon shaped, thin nails bilaterally on the thumbs of unknown duration with yellow discoloration (see Figure 1). Her BMI was 17.42. The physical exam was otherwise normal, monofilament testing of the feet was within normal limits. Additionally, the patient had a tender, clean, healing wound on the heel of her foot due to recent trauma. There was no koilonychia of the toenails.

Complete blood count showed a white cell count of 4.64 k/uL, hemoglobin of 13.8 g/dL, a Mean Corpuscular Volume (MCV) of 97 fL, a Mean Corpuscular Hemoglobin (MCH) of 33.5 pg, a Red cell Distribution Width (RDW) of 16.7%, platelets were 155 K/uL, and the absolute neutrophil count was 2.5 K/uL. Comprehensive metabolic panel showed a sodium of 127 mmol/L, potassium 4.8 mmol/L, glucose 39mg/dL, BUN 6mg/dL, albumin 3.7g/dL, alkaline phosphatase 213 U/L, alanine transaminase (ALT) of 32 U/L, and an aspartate Aminotransferase (AST) of 84U/L.



Figure 1: Photograph of first finger

Discussion

This case of koilonychia is most likely due to malnutrition associated with chronic alcohol abuse, malabsorption due to a Billroth II procedure, and questionable compliance with vitamin supplements. This is further supported by her self-reported symptom of a poor appetite and labs revealing a low glucose and an AST:ALT ratio greater than 2:1. The koilonychia may be also—or alternatively—secondary to onychomycosis, a fungal infection of the nail, given the yellow discoloration of the nails on exam.

Chronic alcohol abuse can lead to malnutrition. Alcohol can directly affect the liver leading to decreased protein and urea production. Alcohol can impair the gastrointestinal system leading to decreased nutrient absorption, especially of proteins and vitamins. In addition, drinking alcohol provides calories causing a person to feel satiated and, therefore, consume less nutrients in the diet [3].

Malnutrition is just one of the causes of koilonychia. It may, itself, be independently associated with alcohol abuse. In a study with 200 subjects with chronic alcohol abuse, the most common nail change was koilonychia [4]. Other common causes of koilonychia include iron deficiency, hemochromatosis, coronary artery disease, gastrointestinal carcinoma, hypothyroidism, trauma, and occupational chemical exposure [5]. Specifically in relation to malnutrition, aside from iron deficiency, deficiencies in riboflavin, niacin, and vitamin C have been associated with koilonychia [2].

It is thought that koilonychia occurs due to changes in blood supply to the nail, endocrinopathies, deficiencies in amino acids which support nail formation, trauma, and primary dermatologic causes, like psoriasis [1].

Conclusion

There are many causes of koilonychia, aside from its classic association with iron deficiency anemia. It is important to keep these causes in mind as koilonychia can be a clue to an underlying medical problem, such as malnutrition and alcohol abuse, as seen in this case.

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